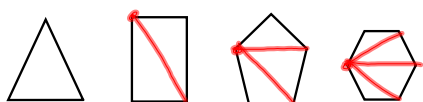
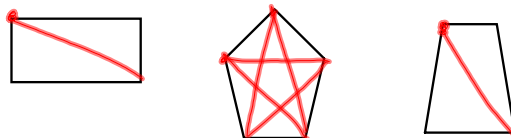


## Chapter 8 Quadrilaterals

### 8-1 Find Angle Measures in Polygons

diagonal--segment that connects nonconsecutive vertices

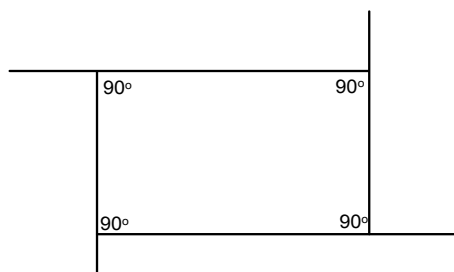
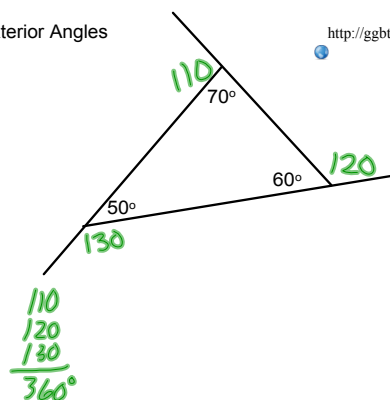


sides	3	4	5	6	$n$
# of $\Delta$ s	1	2	3	4	$(n-2)$
degrees	$180^\circ$	$360^\circ$	$540^\circ$	$720^\circ$	$720^\circ (n-2)$

**Theorem 8.1 Polygon Interior Angles Theorem**  
In a convex polygon with  $n$  sides, the sum of the interior angles is  $(n-2)180$ .

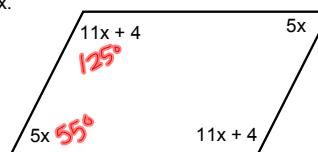
**Corollary to Theorem 8.1--Interior Angles of a Quadrilateral**--the sum of the measures of the interior angles of a quadrilateral is  $360^\circ$ .

Exterior Angles



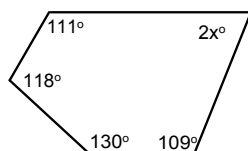
Theorem 8.2 Polygon Exterior Angles Theorem--  
In a convex polygon, the sum of the measures of the exterior angles, one at each vertex, is  $360^\circ$ .

Solve for x.



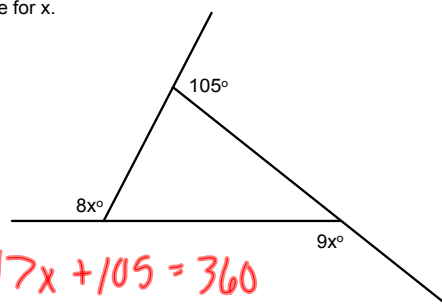
$$\begin{aligned} 2(5x) + 2(11x + 4) &= 360 \\ 5x + 11x + 4 &= 180 \\ x &= 11 \end{aligned}$$

Solve for x.



$$\begin{aligned} (5-2)180 \\ 2x + 468 &= 540 \\ x &= 36^\circ \end{aligned}$$

Solve for x.



$$\begin{aligned} 17x + 105 &= 360 \\ x &= 15 \end{aligned}$$

Regular Polygon--Both equilateral and equiangular

n	6
interior angle sum	$(6-2)180$ $720^\circ$
exterior angle sum	$360^\circ$
<u>Regular</u>	
each interior angle	$\frac{720}{6} = 120^\circ$
each exterior angle	$\frac{360}{6} = 60^\circ$

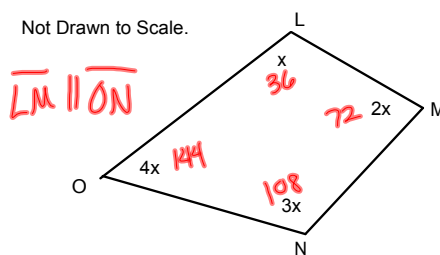
supplementary

n	10
interior angle sum	$(10-2)180$ $1440^\circ$
exterior angle sum	$360^\circ$
<u>Regular</u>	
each interior angle	$144^\circ$
each exterior angle	$36^\circ$

n	$360 \div 24 = 15$
interior angle sum	$2340^\circ$
exterior angle sum	$360^\circ$
<u>Regular</u>	
each interior angle	$156^\circ$
each exterior angle	$180 - 156$ $24^\circ$ *

n	30
interior angle sum	$5040^\circ$
exterior angle sum	$360^\circ$
<u>Regular</u>	
each interior angle	$168^\circ$
each exterior angle	$12^\circ$

Not Drawn to Scale.



Which sides are parallel?

HW  
p510-511  
#s 3-5, 7-9, 12-15, 19-21, 26